MTS-3294US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Yasushi Ueda, et al.   : Art Unit:

Serial No.:   To Be Assigned   : Examiner:

Filed: Herewith   :

FOR: DATA REPRODUCTION APARATUS   :

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents

Washington, D.C. 20231

S I R :

Prior to examination, please amend the above-application as follows:

IN THE SPECIFICATION:

After the title and before the first paragraph, please insert the following paragraph:

THIS APPLICATION IS A U.S. NATIONAL PHASE APPLICATION OF PCT INTERNATIONAL APPLICATION PCT/JP01/02456.

Please replace the paragraph beginning at page 1, line 4, with the following:

The present invention relates to a data reproduction apparatus and method for reading signals recorded on a recording medium and outputting error-corrected data.

Please replace the paragraph beginning at page 9, line 8, with the following:

The present invention solves these problems with the prior art and it is an object of the present invention to provide a data reproduction apparatus and method capable of reproducing data in its original, correct format by performing synchronization detection at a correct position or using an optimum error correction algorithm, even in the case where a seek is involved or a defect is detected.

Please replace the paragraph beginning at page 9, line 16, with the following:

To achieve the above object, one aspect of the present invention is a data reproduction apparatus comprising:

Please replace the paragraph beginning at page 10, line 7, with the following:

Another aspect of the present invention is the present invention described above, wherein:

Please replace the paragraph beginning at page 10, line 19, with the following:

Still another aspect of the present invention is a data reproduction apparatus comprising:

Please replace the paragraph beginning at page 11, line 19, with the following:

Yet still another aspect of the present invention is the present invention described above, wherein said synchronization signal detection means changes

criteria for detecting said synchronization signal according to said monitored seek length.

Please replace the paragraph beginning at page 12, line 1, with the following:

Still yet another aspect of the present invention is the present invention described above, wherein said seek length detection means comprises a rewritable register and said window generation means changes the width of said synchronization detection window signal by comparing a predetermined set value set in said register with said seek length.

Please replace the paragraph beginning at page 12, line 9, with the following:

A further aspect of the present invention is the present invention described above, wherein said predetermined period of time during which the width of said synchronization detection window signal is changed is a time period from the completion of said seek operation to the time when said synchronization signal is detected with stability.

Please replace the paragraph beginning at page 12, line 16, with the following:

A still further aspect of the present invention is the present invention mentioned above, wherein said predetermined period of time during which the width of said synchronization detection window signal is changed is associated with said seek length.

Please replace the paragraph beginning at page 12, line 22, with the following:

A yet further aspect of the present invention is the present invention described above, wherein the quantity of change in the width of said synchronization detection window signal is associated with said seek length.

Please replace the paragraph beginning at page 13, line 7, with the following:

A still yet further aspect of the present invention is a data reproduction apparatus comprising:

Please replace the paragraph beginning at page 13, line 20, with the following:

An additional aspect of the present invention is the present invention described above, wherein said defect detection means determines the type and/or size of said defect and said error correction means modifies said predetermined algorithm to be modified according to said determined type and/or size of said defect.

Please replace the paragraph beginning at page 14, line 8, with the following:

A still additional aspect of the present invention is a data reproduction apparatus comprising:

Please replace the paragraph beginning at page 15, line 8, with the following:

A yet additional aspect of the present invention is the present invention described above, wherein said defect detection means determines the type and/or size of said defect and said window generation means changes the quantity of a change in the width of said synchronization detection window signal according to said determined type and/or size of said defect.

Please replace the paragraph beginning at page 15, line 16, with the following:

A still yet additional aspect of the present invention is the present invention described above, wherein said window generation means detects said defect, and if the width of said window signal is changed, continues to change the width of said synchronization detection window signal for a predetermined period of time after the detection of said defect ends.

Please replace the paragraph beginning at page 16, line 1, with the following:

A supplementary aspect of the present invention is the present invention described above, wherein said predetermined period of time is a time period from the completion of the detection of said defect to the time when said synchronization signal is detected with stability.

Please replace the paragraph beginning at page 16, line 7, with the following:

A still supplementary aspect of the present invention is the present invention described above, wherein said synchronization signal detection means

changes said criteria for detecting said synchronization signal according to the detection of said defect.

Please replace the paragraph beginning at page 16, line 16, with the following:

A yet supplementary aspect of the present invention is a data reproduction apparatus comprising:

Please replace the paragraph beginning at page 17, line 10, with the following:

A still yet supplementary aspect of the present invention is a data reproduction apparatus comprising:

Please replace the paragraph beginning at page 18, line 12, with the following:

Another aspect of the present invention is the present invention described above, wherein said synchronization signal detection means changes said criteria for detecting said synchronization signal according to the determination of said track determination means.

Please replace the paragraph beginning at page 18, line 23, with the following:

Still another aspect of the present invention is the present invention described above, wherein said window generation means comprises a rewritable register and changes the width of said synchronization detection window signal by a width set in said register.

Please replace the paragraph beginning at page 19, line 5, with the following:

Yet still another aspect of the present invention is the present invention described above, wherein said seek length detection means uses an address detected in said storage medium to detect said seek length.

Please replace the paragraph beginning at page 19, line 10, with the following:

Still yet another aspect of the present invention is the present invention described above, wherein said defect detection means analyzes the envelope of an RF signal read from said storage medium to detect said defect.

Please replace the paragraph beginning at page 19, line 15, with the following:

A further aspect of the present invention is the present invention described above, wherein said track determination means uses the address detected from said storage medium to perform said determination.

Please replace the paragraph beginning at page 19, line 20, with the following:

A still further aspect of the present invention is a program for causing a computer to function as all or any of the reproduction means of reproducing data recorded on a recording medium, the data error correction means of performing error correction processing on the data reproduced from said recording medium based on a predetermined algorithm, and seek length detection means of

monitoring a seek length when the data is reproduced from said recording medium of the data reproduction apparatus.

Please replace the paragraph beginning at page 20, line 7, with the following:

A yet further aspect of the present invention is a program for causing a computer to function as all or any of the reproduction means of reproducing data recorded on a recording medium, the clock count means of counting clocks based on data reproduced from said recording medium, window generation means of estimating the position of a synchronization signal in said reproduced data based on the count value of said clocks and generating a synchronization detection window signal having a predetermined width including the estimated position, the synchronization signal detection means of detecting the synchronization signal from the data reproduced from said recording medium by searching within said synchronization detection window; and the seek length detection means of monitoring a seek length when the data is reproduced from said recording medium of the data reproduction apparatus.

Please replace the paragraph beginning at page 21, line 1, with the following:

A still yet further aspect of the present invention is a program for causing a computer to function as all or any of the reproduction means of reproducing data recorded on a recording medium, the data error correction means of performing error correction processing on the data reproduced from said recording medium based on a predetermined algorithm, and the defect detection means of detecting a defect on said recording medium of the data reproduction apparatus.

Please replace the paragraph beginning at page 21, line 11, with the following:

An additional aspect of the present invention is a program for causing a computer to function as all or any of the clock count means of counting clocks based on the data reproduced from said recording medium, window generation means of estimating the position of a synchronization signal in said reproduced data based on the count value of said clocks and generating a synchronization detection window signal having a predetermined width including the estimated position, the synchronization signal detection means of detecting the synchronization signal from the data reproduced from said recording medium by searching within said synchronization detection window, the defect detection means of detecting a defect on said recording medium based on the data reproduced from said recording medium of the data reproduction apparatus.

Please replace the paragraph beginning at page 22, line 4, with the following:

A still additional aspect of the present invention is a program for causing a computer to function as all or any of the reproduction means of reproducing data recorded on a recording medium on which a land track and a groove track are formed alternatively in a spiral or concentric fashion, the error correction means of performing error correction processing on the data reproduced from said recording medium based on a predetermined algorithm, and the track determination means of determining at least whether said reproduced data is reproduced form said land track or said groove track of the data reproduction apparatus.

Please replace the paragraph beginning at page 22, line 16, with the following:

A yet additional aspect of the present invention is a program for causing a computer to function as all or any of the reproduction means of reproducing data recorded on a recording medium on which a land track and a groove track are formed alternatively in a spiral or concentric fashion, the clock count means of counting clocks based on data reproduced from said recording medium, the window generation means of estimating the position of a synchronization signal in said reproduced data based on the count value of said clocks and generating a synchronization detection window signal having a predetermined width including the estimated position, the synchronization signal detection means of detecting the synchronization signal from the data reproduced from said recording medium by searching within said synchronization detection window, and the track determination means of determining at least whether said reproduced data is reproduced form said land track or said groove track of the data reproduction apparatus.

Please replace the paragraph beginning at page 25, line 21, with the following:

A first embodiment of the present invention will be described with respect to FIG. 1. FIG. 1 is a block diagram showing signal processing by a data reproduction apparatus and method according to the present invention, in which an optical disk is used by way of example.

Please replace the paragraph beginning at page 45, line 5, with the following:

The present invention also provides a program that cooperates with a computer for causing the computer to perform the functions of all or some of the means of the above-described data reproduction apparatus and method of the present invention.

IN THE CLAIMS:

Please replace claims 19, 20, 21, and 22 with the following amended claims:

1   19.   The data reproduction means according to Claim 3, 11, or 17,
2 wherein said window generation means comprises a rewritable register and
3 changes the width of said synchronization detection window signal by a width set
4 in said register.

1   20.   The data reproduction apparatus according to any one of Claims 1 or
2 3, wherein said seek length detection means uses an address detected in said
3 storage medium to detect said seek length.

1   21.   The data reproduction apparatus according to Claims 9 or 11,
2 wherein said defect detection means analyzes the envelope of an RF signal read
3 from said storage medium to detect said defect.

1   22.   The data reproduction apparatus according to Claims 16 or 17,

2 wherein said track determination means uses the address detected from said

3 storage medium to perform said determination.

Respectfully submitted,

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Allan Ratner, Reg. No., 19,717
Attorney for Applicants

AR/ebf

Enclosure: Version With Markings Showing Changes Made

Dated: November 28, 2001
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The Assistant Commissioner for Patents is hereby
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I hereby certify that this paper and fee are being deposited, under 37 C.F.R. § 1.10 and with sufficient postage, using the "Express
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_____
                      Kathleen Libby

VERSION WITH MARKINGS SHOWING CHANGES MADE

SPECIFICATION:

After the title and before the first paragraph, please insert the following paragraph:

THIS APPLICATION IS A U.S. NATIONAL PHASE APPLICATION OF PCT INTERNATIONAL APPLICATION PCT/JP01/02456.

At page 1, line 4:

The present invention relates to a data reproduction apparatus and method for reading signals recorded on a recording medium and outputting error-corrected data.

At page 9, line 8:

The present invention solves these problems with the prior art and it is an object of the present invention to provide a data reproduction apparatus and method capable of reproducing data in its original, correct format by performing synchronization detection at a correct position or using an optimum error correction algorithm, even in the case where a seek is involved or a defect is detected.

At page 9, line 16:

To achieve the above object, [the 1st invention] one aspect of the present invention [(corresponding to claim 1)] is a data reproduction apparatus comprising:

At page 10, line 7:

[The 2nd invention] <u>Another aspect</u> of the present invention [(corresponding to claim 2)] is the present invention described above, wherein:

At page 10, line 19:

[The 3rd invention] <u>Still another aspect</u> of the present invention [(corresponding to claim 3)] is a data reproduction apparatus comprising:

At page 11, line 19:

[The 4th invention] <u>Yet still another aspect</u> of the present invention [(corresponding to claim 4)] is the present invention described above, wherein said synchronization signal detection means changes criteria for detecting said synchronization signal according to said monitored seek length.

At page 12, line 1:

[The 5th invention] <u>Still yet another aspect</u> of the present invention [(corresponding to claim 5)] is the present invention described above, wherein said seek length detection means comprises a rewritable register and said window generation means changes the width of said synchronization detection window signal by comparing a predetermined set value set in said register with said seek length.

At page 12, line 9:

[The 6th invention] <u>A further aspect</u> of the present invention [(corresponding to claim 6)] is the present invention described above, wherein said predetermined period of time during which the width of said synchronization detection window signal is changed is a time period from the completion of said

seek operation to the time when said synchronization signal is detected with stability.

At page 12, line 16:

[The 7th invention] A still further aspect of the present invention [(corresponding to claim 7)] is the present invention mentioned above, wherein said predetermined period of time during which the width of said synchronization detection window signal is changed is associated with said seek length.

At page 12, line 22:

[The 8th invention] A yet further aspect of the present invention [(corresponding to claim 8)] is the present invention described above, wherein the quantity of change in the width of said synchronization detection window signal is associated with said seek length.

At page 13, line 7:

[The 9th invention] A still yet further aspect of the present invention [(corresponding to claim 9)] is a data reproduction apparatus comprising:

At page 13, line 20:

[The 10th invention] An additional aspect of the present invention [(corresponding to claim 10)] is the present invention described above, wherein said defect detection means determines the type and/or size of said defect and said error correction means modifies said predetermined algorithm to be modified according to said determined type and/or size of said defect.

At page 14, line 8:

[The 11th invention] <u>A still additional aspect</u> of the present invention [(corresponding to claim 11)] is a data reproduction apparatus comprising:

At page 15, line 8:

[The 12th invention] <u>A yet additional aspect</u> of the present invention [(corresponding to claim 12)] is the present invention described above, wherein said defect detection means determines the type and/or size of said defect and said window generation means changes the quantity of a change in the width of said synchronization detection window signal according to said determined type and/or size of said defect.

At page 15, line 16:

[The 13th invention] <u>A still yet additional aspect</u> of the present invention [(corresponding to claim 13)] is the present invention described above, wherein said window generation means detects said defect, and if the width of said window signal is changed, continues to change the width of said synchronization detection window signal for a predetermined period of time after the detection of said defect ends.

At page 16, line 1:

[The 14th invention] <u>A supplementary aspect</u> of the present invention [(corresponding to claim 14)] is the present invention described above, wherein said predetermined period of time is a time period from the completion of the detection of said defect to the time when said synchronization signal is detected with stability.

At page 16, line 7:

[The 15th invention] A still supplementary aspect of the present invention [(corresponding to claim 15)] is [that] the present invention described above, wherein said synchronization signal detection means changes said criteria for detecting said synchronization signal according to the detection of said defect.

At page 16, line 16:

[The 16th invention] A yet supplementary aspect of the present invention [(corresponding to claim 16)] is a data reproduction apparatus comprising:

At page 17, line 10:

[The 17th invention] A still yet supplementary aspect of the present invention [(corresponding to claim 17)] is a data reproduction apparatus comprising:

At page 18, line 12:

[The 18th invention] Another aspect of the present invention [(corresponding to claim 18)] is the present invention described above, wherein said synchronization signal detection means changes said criteria for detecting said synchronization signal according to the determination of said track determination means.

At page 18, line 23:

[The 19th invention] Still another aspect of the present invention [(corresponding to claim 19)] is the present invention described above, wherein said window generation means comprises a rewritable register and changes the

width of said synchronization detection window signal by a width set in said register.

At page 19, line 5:

[The 20th invention] <u>Yet still another aspect</u> of the present invention [(corresponding to claim 20)] is the present invention described above, wherein said seek length detection means uses an address detected in said storage medium to detect said seek length.

At page 19, line 10:

[The 21st invention] <u>Still yet another aspect</u> of the present invention [(corresponding to claim 21)] is the present invention described above, wherein said defect detection means analyzes the envelope of an RF signal read from said storage medium to detect said defect.

At page 19, line 15:

[The 22nd invention] <u>A further aspect</u> of the present invention [(corresponding to claim 22)] is the present invention described above, wherein said track determination means uses the address detected from said storage medium to perform said determination.

At page 19, line 20:

[The 23rd invention] <u>A still further aspect</u> of the present invention [(corresponding to claim 23)] is a program for causing a computer to function as all or any of the reproduction means of reproducing data recorded on a recording medium, the data error correction means of performing error correction processing

on the data reproduced from said recording medium based on a predetermined algorithm, and seek length detection means of monitoring a seek length when the data is reproduced from said recording medium of the data reproduction apparatus [according to the 1st present invention].

At page 20, line 7:

[The 24th invention] A yet further aspect of the present invention [(corresponding to claim 24)] is a program for causing a computer to function as all or any of the reproduction means of reproducing data recorded on a recording medium, the clock count means of counting clocks based on data reproduced from said recording medium, window generation means of estimating the position of a synchronization signal in said reproduced data based on the count value of said clocks and generating a synchronization detection window signal having a predetermined width including the estimated position, the synchronization signal detection means of detecting the synchronization signal from the data reproduced from said recording medium by searching within said synchronization detection window; and the seek length detection means of monitoring a seek length when the data is reproduced from said recording medium of the data reproduction apparatus [according to the 13th present invention].

At page 21, line 1:

[The 25th invention] A still yet further aspect of the present invention [(corresponding to claim 25)] is a program for causing a computer to function as all or any of the reproduction means of reproducing data recorded on a recording medium, the data error correction means of performing error correction processing on the data reproduced from said recording medium based on a predetermined

algorithm, and the defect detection means of detecting a defect on said recording medium of the data reproduction apparatus [according to the 25th present invention].

At page 21, line 11:

[The 26th invention] <u>An additional aspect</u> of the present invention [(corresponding to claim 26)] is a program for causing a computer to function as all or any of the clock count means of counting clocks based on the data reproduced from said recording medium, window generation means of estimating the position of a synchronization signal in said reproduced data based on the count value of said clocks and generating a synchronization detection window signal having a predetermined width including the estimated position, the synchronization signal detection means of detecting the synchronization signal from the data reproduced from said recording medium by searching within said synchronization detection window, the defect detection means of detecting a defect on said recording medium based on the data reproduced from said recording medium of the data reproduction apparatus [according to the 11th present invention].

At page 22, line 4:

[The 27th invention (corresponding to claim 27)] <u>A still additional aspect of the present invention</u> is a program for causing a computer to function as all or any of the reproduction means of reproducing data recorded on a recording medium on which a land track and a groove track are formed alternatively in a spiral or concentric fashion, the error correction means of performing error correction processing on the data reproduced from said recording medium based on a

predetermined algorithm, and the track determination means of determining at least whether said reproduced data is reproduced form said land track or said groove track of the data reproduction apparatus [according to the 16th present invention].

At page 22, line 16:

[The 28th invention] A yet additional aspect of the present invention [(corresponding to claim 28)] is a program for causing a computer to function as all or any of the reproduction means of reproducing data recorded on a recording medium on which a land track and a groove track are formed alternatively in a spiral or concentric fashion, the clock count means of counting clocks based on data reproduced from said recording medium, the window generation means of estimating the position of a synchronization signal in said reproduced data based on the count value of said clocks and generating a synchronization detection window signal having a predetermined width including the estimated position, the synchronization signal detection means of detecting the synchronization signal from the data reproduced from said recording medium by searching within said synchronization detection window, and the track determination means of determining at least whether said reproduced data is reproduced form said land track or said groove track of the data reproduction apparatus [according to the 17th present invention].

At page 25, line 21:

A first embodiment of the present invention will be described with respect to FIG. 1. FIG. 1 is a block diagram showing signal processing by a data

reproduction apparatus <u>and method</u> according to the present invention, in which an optical disk is used by way of example.

At page 45, line 5:

The present invention also provides a program that cooperates with a computer for causing the computer to perform the functions of all or some of the means of the above-described data reproduction apparatus <u>and method</u> of the present invention.

<u>CLAIMS:</u>

Claims 19, 20, 21 and 22 have been amended as follows:

1   19.   The data reproduction means according to Claim 3, 11, or 17,
2   wherein said window generation means comprises a rewritable register and
3   changes the width of said synchronization detection window signal by a width set
4   in said register.

1   20.   The data reproduction apparatus according to <u>any one of</u> Claim<u>s</u> 1 or
2   3, wherein said seek length detection means uses an address detected in said
3   storage medium to detect said seek length.

1   21.   The data reproduction apparatus according to Claim<u>s</u> 9 or 11,
2   wherein said defect detection means analyzes the envelope of an RF signal read
3   from said storage medium to detect said defect.

1   22.   The data reproduction apparatus according to Claim<u>s</u> 16 or 17,
2   wherein said track determination means uses the address detected from said
3   storage medium to perform said determination.